1. A method for detecting organ-matter shift in a patient, the method comprising:

pre-acquiring a three-dimensional image data set of the patient;

obtaining a real-time ultrasound image of the patient;

correlating the real-time ultrasound image and the pre-acquired three-dimensional image to obtain a correlated two-dimensional image;

selecting a first set of points on the real-time ultrasound image;

selecting a corresponding second set of points on the correlated two-dimensional image; and

determining a vector representing at least one of a distance and a direction of the organ matter shift.

2. The method as defined in Claim 1 further comprising displaying the vector representing at least one of a distance and a direction of the organ matter shift.

3. The method as defined in Claim 1 wherein preacquiring a three-dimensional image data set of the patient further includes preacquiring a three-dimensional atlas data set.

4. The method as defined in Claim 1 further comprising overlaying image segmentations onto the real-time ultrasound image of the patient.

5. The method as defined in Claim 2 further comprising displaying the vector on the correlated two-dimensional image.

6. The method as defined in Claim 5 further comprising displaying the vector as a dotted line on the correlated two-dimensional image.

7. The method as defined in Claim 1 wherein selecting a first set of points includes selecting three points on the real-time ultrasound image and selecting a corresponding second set of points includes selecting three corresponding points on the correlated two-dimensional image.

8. The method as defined in Claim 1 wherein pre-acquiring the three-dimensional image of the patient is acquired by using an imaging device selected from a group consisting of ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography (PET), x-rays or any combination thereof.

9. The method as defined in Claim 1 wherein correlating the real-time ultrasound image and the pre-acquired three-dimensional image includes performing at least one of registration, localization, and calibration.

10. The method as defined in Claim 9 wherein the registration is 2-D/3-D registration that uses two pre-established spatial transformations to relate surgical space to a pre-acquired three-dimensional image space.

11. The method as defined in Claim 10 wherein the first transformation is between the real-time ultrasound image and the pre-acquired three-dimensional image data set and the second transformation is between a coordinate system of the ultrasound image and an externally measurable reference system using a position tracking sensor.

12. The method as defined in Claim 11 wherein said position tracking sensor is selected from a group consisting of optical, electromagnetic, acoustic localizers, or any combination thereof.

13. The method as defined in Claim 1 wherein the organ-matter shift is a brain shift.

14. The method as defined in Claim 8 further comprising tracking a location of a surgical instrument using the position tracking sensor.

15. The method as defined in Claim 13 further comprising calibrating a tracked ultrasound image device that is operable to obtain the real-time ultrasound image of the patient.

16. The method as defined in Claim 15 wherein the calibration further includes scanning a calibration device with the tracked ultrasound image device and calculating a transformation between landmarks identified by the ultrasound image device and the actual landmarks on the calibration device.

17. The method as defined in Claim 1 wherein selecting a first set of points in the real-time ultrasound image further includes selecting the points using a peripheral device.

18. The method as defined in Claim 1 wherein correlating the real-time ultrasound image and the preacquired three-dimensional image further includes transforming coordinates of the first set of points selected on the real-time ultrasound image into the three-dimensional image data set to obtain the correlated two-dimensional image.

19. A method for surgical navigation using a surgical navigation system comprising:

extracting a two-dimensional image from a three-dimensional image data set;

overlaying the extracted two-dimensional image onto an ultrasound image; and

displaying the overlaid image with an iconic representation of a localized surgical instrument superimposed on the overlaid image.

20. The method as defined in Claim 19 further comprising:

moving the localized surgical instrument to a new location; and

displaying an iconic representation of the new location of the surgical instrument on the overlaid image.

21. (New) The method as defined in Claim 16 further comprising generating the three-dimensional image data set from a device selected from a group consisting of ultrasound, computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography (PET), x-rays or any combination thereof.

22. A method for surgical navigation using three-dimensional image data sets comprising:

acquiring a three-dimensional image data set;

reconstructing the three-dimensional image data set into an orthogonal data set;

displaying the orthogonal data set as a three-dimensional image on a display;

acquiring an ultrasound image and mapping the ultrasound image onto a surface of the three-dimensional image using textured mapping; and

displaying the textured map image.

23. The method as defined in Claim 22 further comprising displaying an iconic representation of a localized surgical instrument onto the textured map image.

24. The method as defined in Claim 23 further comprising:

moving the localized surgical instrument to a new location; and

displaying an iconic representation of the new location of the surgical instrument on the textured map image.

25. A method for detecting organ-matter shift in a patient, the method comprising:

pre-acquiring a three-dimensional image data set of the patient;

obtaining a real-time ultrasound image of the patient;

correlating the real-time ultrasound image and the pre-acquired three-dimensional image to obtain a correlated two-dimensional image using 2-D/3-D registration; and

determining a vector representing at least one of a distance and a direction of the organ matter shift.

26. The method as defined in Claim 25 further comprising displaying the vector representing at least one of a distance and a direction of the organ matter shift.

27. The method as defined in Claim 25 wherein preacquiring a three-dimensional image data set of the patient further includes preacquiring a three-dimensional atlas data set.

28. The method as defined in Claim 25 further comprising overlaying image segmentations onto the real-time ultrasound image of the patient.

29. The method as defined in Claim 25 wherein correlating using 2-D/3-D registration further includes determining two spatial transformations to relate surgical space to three-dimensional image space.

30. The method as defined in Claim 25 wherein using the two spatial transformations include using a first transformation between the ultrasound image and the three-dimensional image data set and using a second transformation between a coordinate system of the ultrasound image and an externally measurable reference system using a position tracking sensor.

31. The method as defined in Claim 30 wherein said position tracking sensor is selected from a group consisting of optical, electromagnetic, acoustic localizers, or any combination thereof.

32. The method as defined in Claim 30 further comprising tracking a location of a surgical instrument using the position tracking sensor.

33. The method as defined in Claim 25 further comprising selecting a first set of points on the real-time ultrasound image and selecting a corresponding second set of points on the correlated two-dimensional image.

34. A method for detecting organ-matter shift from a preacquired three-dimensional image data set of a patient, the method comprising:

obtaining a real-time ultrasound image of the patient;

selecting a first set of points on the real-time ultrasound image;

transforming the coordinates of the first set of points into the preacquired three-dimensional image data set;

extracting a correlated two-dimensional image from the three-dimensional image data set;

selecting a corresponding second set of points on the correlated two-dimensional image; and

determining a vector representing at least one of a distance and a direction of the organ matter shift.

35. The method as defined in Claim 34 further comprising displaying the vector representing at least one of a distance and a direction of the organ matter shift.

36. The method as defined in Claim 34 wherein preacquiring a three-dimensional image data set of the patient further includes preacquiring a three-dimensional atlas data set.

37. The method as defined in Claim 34 further comprising overlaying image segmentations onto the real-time ultrasound image of the patient.

38. The method as defined in Claim 34 wherein selecting a first set of points includes selecting three points on the real-time ultrasound image and selecting a corresponding second set of points includes selecting three corresponding points on the correlated two-dimensional image.

39. The method as defined in Claim 34 further comprising tracking a location of a surgical instrument using a position tracking sensor.

40. The method as defined in Claim 34 further comprising calibrating a tracked ultrasound image device that is operable to obtain the real-time ultrasound image of the patient.

41. The method as defined in Claim 34 wherein selecting a first set of points in the real-time ultrasound image further includes selecting these points using a peripheral device.

42. The method as defined in Claim 34 wherein the correlated two-dimensional image is generated from correlating the real-time ultrasound image with the preacquired three-dimensional image data set.

43. The method as defined in Claim 42 wherein correlating includes performing at least one of registration, localization, and calibration.

44. A method for detecting organ-matter shift in a patient, the method comprising:

obtaining a preacquired image of the patient;

obtaining a real-time image of the patient;

correlating the real-time image and the preacquired image to obtain a correlated image;

selecting a first set of points on one of said images; and

displaying a corresponding second set of points on another one of said images, wherein said corresponding second set of points represents the organ-matter shift in the patient.

45. The method as defined in Claim 44 wherein determining a preacquired image of the patient includes obtaining a three-dimensional image data set of the patient.

46. The method as defined in Claim 45 wherein obtaining a real-time image of the patient includes obtaining a real-time ultrasound image of the patient.

47. The method as defined in Claim 46 wherein selecting a first set of points includes selecting a first set of points on the real-time ultrasound image.

48. The method as defined in Claim 47 wherein displaying a corresponding second set of points includes displaying a corresponding second set of points on the correlated two-dimensional image.

49. The method as defined in Claim 48 further comprising selecting the corresponding second set of points on the correlated two-dimensional image.

50. The method as defined in Claim 49 further comprising determining a vector representing at least one of a distance and a direction of the organ-matter shift.

51. The method as defined in Claim 50 further comprising displaying the vector representing at least one of the distance and the direction of the organ-matter shift.